

# Judges' Retirement System of Illinois

GASB Statement Nos. 67 and 68  
Accounting and Financial Reporting for  
Pensions as of June 30, 2019



December 3, 2019

The Board of Trustees  
Judges' Retirement System of Illinois  
Springfield, Illinois

Dear Board Members:

This report provides accounting and financial reporting information that is intended to comply with the Governmental Accounting Standards Board (GASB) Statement Nos. 67 and 68 for the Judges' Retirement System of Illinois ("JRS"). These calculations have been made on a basis that is consistent with our understanding of these Statements.

GASB Statement No. 67 is the accounting standard that applies to the stand-alone financial reports issued by retirement systems. GASB Statement No. 68 establishes accounting and financial reporting for state and local government employers who provide their employees (including former employees) pension benefits through a trust.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of providing reporting and disclosure information that satisfies the requirements of GASB Statement Nos. 67 and 68. The Net Pension Liability is not an appropriate measure for measuring the sufficiency of plan assets to cover the estimated cost of settling the employer's benefit obligation. The Net Pension Liability is not an appropriate measure for assessing the need for or amount of future employer contributions. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statement Nos. 67 and 68 may produce significantly different results. This report may be provided to parties other than the Judges' Retirement System of Illinois ("JRS") only in its entirety and only with the permission of JRS.

Our valuation and projections assume the sponsor will make the contributions required by state statute. To the extent the sponsor does not make the statutory required contribution the results contained in this report could be significantly different.

This report is based upon information, furnished to us by JRS, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. This information was checked for internal consistency, but it was not audited.

This report complements the actuarial valuation report that was provided to JRS and should be considered in conjunction with that report. Please see the actuarial valuation report as of June 30, 2019, for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.


To the best of our knowledge, the information contained with this report is accurate and fairly represents the actuarial position of the Judges' Retirement System of Illinois. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

The signing actuaries are independent of the plan sponsor.

Alex Rivera, Heidi Barry, and Jeff Tebeau are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,

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By   
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Auditor's Note – This information is intended to assist in preparation of the financial statements of the Judges' Retirement System of Illinois. Financial statements are the responsibility of management, subject to the auditor's review. Please let us know if the auditor recommends any changes.



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# SECTION A

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## EXECUTIVE SUMMARY

# Executive Summary as of June 30, 2019

	2019
Actuarial Valuation Date	June 30, 2019
Measurement Date of the Net Pension Liability	June 30, 2019
Plan's Fiscal Year Ending Date (Reporting Date) for GASB Statement No. 67	June 30, 2019
Employer's Fiscal Year Ending Date (Reporting Date) for GASB Statement No. 68	June 30, 2020

## Membership

Number of	
- Retirees and Beneficiaries	1,262
- Inactive, Nonretired Members	26
- Active Members	956
- Total	2,244
Covered Payroll <sup>a</sup>	\$ 138,415,234

## Net Pension Liability

Total Pension Liability	\$ 2,850,453,114
Plan Fiduciary Net Position	1,073,103,751
Net Pension Liability	\$ 1,777,349,363
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	37.65 %
Net Pension Liability as a Percentage of Covered Payroll	1,284.07 %

## Development of the Single Discount Rate

Single Discount Rate Beginning of Year	6.60 %
Single Discount Rate End of Year	6.34 %
Long-Term Expected Rate of Investment Return	6.50 %
Long-Term Municipal Bond Rate Beginning of Year <sup>b</sup>	3.62 %
Long-Term Municipal Bond Rate End of Year <sup>b</sup>	3.13 %
Last year ending June 30 in the 2019 to 2118 projection period for which projected benefit payments are fully funded	2063

<b>Total Pension Expense for Fiscal Year End June 30, 2019</b>	<b>\$ 201,445,347</b>
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## Deferred Outflows and Deferred Inflows of Resources by Source to be recognized in Future Pension Expenses as of June 30, 2019

	Deferred Outflows of Resources	Deferred (Inflows) of Resources
Difference between expected and actual non-investment experience	\$ 38,184,236	\$ (47,624)
Changes in assumptions	3,000,641	(47,554,686)
Net difference between projected and actual earnings on pension plan investments	15,829,397	(20,193,587)
Total	\$ 57,014,274	\$ (67,795,897)

<sup>a</sup> Covered payroll is based on the requirements of GASB Statement No. 82.

<sup>b</sup> Source: The rates at the beginning and end of the year are the rates for fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 29, 2018, and June 28, 2019, respectively. In describing this index, Fidelity notes that the municipal curves are constructed using option-adjusted analytics of a diverse population of over 10,000 tax exempt securities.

# Discussion

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## Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67 establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68 establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

## Financial Statements

GASB Statement No. 68 requires state or local governments to recognize the net pension liability and the pension expense on their financial statements. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

Paragraph 57 of GASB Statement No. 68 states, "Contributions to the pension plan from the employer subsequent to the measurement date of the collective net pension liability and before the end of the employer's reporting period should be reported as a deferred outflow of resources related to pensions." The information contained in this report does not incorporate any contributions made to JRS subsequent to the measurement date of June 30, 2019.

The pension expense recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the liability and investment experience. The pension expense for fiscal year ending June 30, 2020, is based on the results of the actuarial valuation as of June 30, 2019.

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a statement of fiduciary net position and a statement of changes in fiduciary net position in accordance with GASB Statement No. 67. The *statement of fiduciary net position* presents the assets and liabilities of the pension plan at the end of the pension plan's reporting period. The *statement of changes in fiduciary net position* presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.



## Notes to Financial Statements

GASB Statement No. 68 requires the notes of the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions.

GASB Statement Nos. 67 and 68 require the notes of the financial statements for the employers and pension plans to include certain additional information. The list of disclosure items should include:

- A description of benefits provided by the plan;
- The type of employees and number of members covered by the pension plan;
- A description of the plan's funding policy, which includes member and employer contribution requirements;
- The pension plan's investment policies;
- The pension plan's fiduciary net position and the net pension liability;
- The net pension liability using a discount rate that is 1 percent higher and 1 percent lower than used to calculate the total pension liability and net pension liability for financial reporting purposes;
- Significant assumptions and methods used to calculate the total pension liability;
- Inputs to the discount rates; and
- Certain information about mortality assumptions and the dates of experience studies.

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with GASB Statement No. 67. This information includes:

- The composition of the pension plan's Board and the authority under which benefit terms may be amended;
- A description of how fair value is determined;
- Information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5 percent, receivables, and insurance contracts excluded from plan assets; and
- Annual money-weighted rate of return.

# Discussion

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## Required Supplementary Information

GASB Statement No. 67 requires a 10-year fiscal history of:

- Sources of changes in the net pension liability;
- Information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; and
- A comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

## General Implications of JRS Statutory Funding Policy on Future and Expected Plan Contributions and Funded Status

Given the plan's statutorily defined funding policy, if all actuarial assumptions are met (including the assumption of the plan earning 6.50 percent on the actuarial value of assets), then the following outcomes are expected:

1. The unfunded liability is not expected to be fully amortized during the lifetimes of the current members.
2. The funded status of the plan is expected to increase gradually towards a 90 percent funded ratio at 2045 and then remain level at 90 percent funded thereafter.

This statutory funding policy results in an expected crossover date in 2063 and a GASB Single Discount Rate of 6.34 percent to measure the total pension liability as of June 30, 2019. The projections in this report are strictly for the purpose of determining the GASB Single Discount Rate and are different from a funding projection for the ongoing plan.

## Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. The net pension liability and pension expense should be measured as of the pension plan's fiscal year end (measurement date) on a date that is within the employer's prior fiscal year. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The GASB Statement No. 68 pension expense provided in this report is based on a measurement date of June 30, 2019, but will be used for fiscal year ending June 30, 2020.

The GASB Statement No. 68 pension expense for fiscal year ended June 30, 2019, is based on the results of the actuarial valuation as of June 30, 2018, and is provided in the June 30, 2018, GASB Statement Nos. 67 and 68 actuarial valuation report.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2019, and a measurement date of June 30, 2019.

### Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a Single Discount Rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 6.50 percent; the municipal bond rate is 3.13 percent (based on the daily rate closest to but not later than the measurement date of the Fidelity "20-Year Municipal GO AA Index"); and the resulting Single Discount Rate is 6.34 percent.

### Recent Legislation

Public Act ("P.A.") 100-0023, effective July 6, 2017, modified the State's funding policy to include smoothing State contribution rate increases or decreases due to changes in actuarial assumptions, including investment return assumptions, over a five-year period in equal annual amounts beginning in fiscal year 2018. In addition, changes in actuarial or investment assumptions that increased or decreased the State contribution rate in fiscal years 2014 through 2017 are to be smoothed over a five-year period in equal annual amounts, applying only to the portion of the five-year phase-in that is applicable to fiscal years on and after 2018. The fiscal year 2018 State contribution was recertified, pursuant to P.A. 100-0023.

### Changes in Actuarial Assumptions

The actuarial valuation results summarized in this report involve actuarial calculations that require assumptions about future events. The actuarial assumptions used for the June 30, 2019, actuarial valuation are based on an experience review for the three-year period from July 1, 2015, through June 30, 2018.

As a result of the 2018 experience review, the Board approved the following changes to the assumptions to be used in the June 30, 2019, actuarial valuation:

- Reduce the investment return assumption from 6.75 percent to 6.50 percent;
- Reduce the general (price) inflation assumption from 2.50 percent to 2.25 percent;
- Reduce the wage inflation assumption from 2.75 percent to 2.50 percent;
- Reduce the salary increase assumption;
- Update the mortality tables to the Pub-2010 Above-Median Income General Healthy Retiree and Employee Mortality Tables with adjustments for the System's credibility factors and future mortality improvements using scale MP-2018;
- Update the normal and early retirement rates to better reflect observed experience; and
- Update the turnover rates to better reflect observed experience.

Pursuant to Public Act 99-0232, JRS is required to conduct an actuarial experience review once every three years.

A summary of the actuarial assumptions and methods used in this actuarial valuation are included in Section G of this report.

## SECTION B

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### **FINANCIAL STATEMENTS**

Auditor's Note – This information is intended to assist in preparation of the financial statements of the Judges' Retirement System of Illinois. Financial statements are the responsibility of management, subject to the auditor's review. Please let us know if the auditor recommends any changes.

# Statement of Fiduciary Net Position Years Ended June 30, 2019, and 2018

	<u>2019</u>	<u>2018</u>
<b>Assets</b>		
Cash	\$ 27,068,352	\$ 28,938,179
Receivables		
Contributions:		
Participants	\$ 4,565	\$ 7,438
Employing state agencies	5,852,874	5,215,000
Other Accounts	197,710	197,349
Total Receivables	<u>\$ 6,055,149</u>	<u>\$ 5,419,787</u>
Investments		
Held in the Illinois State Board of Investment		
Commingled Fund at fair value	\$ 1,040,123,694	\$ 978,196,836
Securities lending collateral with State Treasurer	5,630,000	12,439,000
Total Investments	<u>\$ 1,045,753,694</u>	<u>\$ 990,635,836</u>
Capital assets, net of accumulated depreciation	<u>\$ 101,934</u>	<u>\$ 70,481</u>
<b>Total Assets</b>	<u><b>\$ 1,078,979,129</b></u>	<u><b>\$ 1,025,064,283</b></u>
<b>Liabilities</b>		
Payables		
Benefits payable	\$ 335	\$ 17,290
Refunds payable	47,913	13,270
Administrative expenses payable	197,130	109,922
Participants' deferred service credit accounts	-	-
Due to State of Illinois	-	-
Securities lending collateral with State Treasurer	5,630,000	12,439,000
<b>Total Liabilities</b>	<u><b>\$ 5,875,378</b></u>	<u><b>\$ 12,579,482</b></u>
<b>Net Position Restricted for Pensions</b>	<u><b>\$ 1,073,103,751</b></u>	<u><b>\$ 1,012,484,801</b></u>

# Statement of Changes in Fiduciary Net Position Years Ended June 30, 2019, and 2018

	<u>2019</u>	<u>2018</u>
<b>Additions</b>		
Contributions		
Participants	\$ 14,610,446	\$ 14,295,562
Employing state agencies and appropriations	140,518,962	135,962,000
Total Contributions	<u>\$ 155,129,408</u>	<u>\$ 150,257,562</u>
Investment Income		
Net investments income	\$ 15,334,649	\$ 19,629,664
Interest earned on cash balances	463,878	504,929
Net appreciation in fair value of investments	48,942,209	49,815,053
Net Investment Income	<u>\$ 64,740,736</u>	<u>\$ 69,949,646</u>
<b>Total Additions</b>	<u>\$ 219,870,144</u>	<u>\$ 220,207,208</u>
<b>Deductions</b>		
Benefits		
Retirement annuities	\$ 131,239,931	\$ 122,966,147
Survivors' annuities	26,021,895	25,140,113
Disability benefits	88,143	40,678
Lump-sum benefits	-	-
Total Benefits	<u>\$ 157,349,969</u>	<u>\$ 148,146,938</u>
Refunds	990,688	481,716
Administrative	910,537	897,285
<b>Total Deductions</b>	<u>\$ 159,251,194</u>	<u>\$ 149,525,939</u>
 <b>Net Increase in Net Position</b>	 \$ 60,618,950	 \$ 70,681,269
<b>Net Position Restricted for Pensions</b>		
Beginning of Year	<u>\$ 1,012,484,801</u>	<u>\$ 941,803,532</u>
End of Year	<u>\$ 1,073,103,751</u>	<u>\$ 1,012,484,801</u>

## SECTION C

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### **REQUIRED SUPPLEMENTARY INFORMATION**

Auditor's Note – This information is intended to assist in preparation of the financial statements of the Judges' Retirement System of Illinois. Financial statements are the responsibility of management, subject to the auditor's review. Please let us know if the auditor recommends any changes.

## Schedules of Required Supplementary Information

### Schedule of Changes in Net Pension Liability and Related Ratios – Multiyear

Fiscal year ending June 30,	2019	2018	2017	2016	2015	2014	2013
<b>Total Pension Liability</b>							
Service Cost Including Pension Plan Administrative Expense	\$ 50,008,782	\$ 53,221,872	\$ 56,166,214	\$ 58,041,274	\$ 59,619,744	\$ 57,138,961	
Interest on the Total Pension Liability	180,187,890	175,399,302	168,163,770	158,611,299	151,431,750	145,993,903	
Changes of Benefit Terms	-	-	-	-	-	-	
Difference between Expected and Actual Experience	37,888,398	6,190,925	23,042,316	(3,260,012)	28,713,856	4,490,010	
Changes of Assumptions <sup>a</sup>	(42,248,829)	(14,445,948)	(29,511,474)	205,404,829	9,482,302	-	
Benefit Payments	(157,349,969)	(148,146,938)	(140,497,204)	(132,571,796)	(125,654,349)	(118,590,965)	
Refunds of Employee Contributions	(990,688)	(481,716)	(974,665)	(658,051)	(945,807)	(687,923)	
Pension Plan Administrative Expense	(910,537)	(897,285)	(914,405)	(942,950)	(982,656)	(831,652)	
<b>Net Change in Total Pension Liability</b>	66,585,047	70,840,212	75,474,552	284,624,593	121,664,840	87,512,334	
<b>Total Pension Liability - Beginning</b>	2,783,868,067	2,713,027,855	2,637,553,303	2,352,928,710	2,231,263,870	2,143,751,536	
<b>Total Pension Liability - Ending (a)</b>	<u>\$ 2,850,453,114</u>	<u>\$ 2,783,868,067</u>	<u>\$ 2,713,027,855</u>	<u>\$ 2,637,553,303</u>	<u>\$ 2,352,928,710</u>	<u>\$ 2,231,263,870</u>	
<b>Plan Fiduciary Net Position</b>							
Employer Contributions	\$ 140,518,962	\$ 135,962,000	\$ 131,334,000	\$ 132,060,000	\$ 134,039,684	\$ 126,815,881	
Employee Contributions	14,610,446	14,295,562	14,770,467	14,962,055	15,431,105	15,918,732	
Pension Plan Net Investment Income	64,740,736	69,949,646	97,796,479	(6,470,553)	36,009,150	110,058,987	
Benefit Payments	(157,349,969)	(148,146,938)	(140,497,204)	(132,571,796)	(125,654,349)	(118,590,965)	
Refunds of Employee Contributions	(990,688)	(481,716)	(974,665)	(658,051)	(945,807)	(687,923)	
Pension Plan Administrative Expense	(910,537)	(897,285)	(914,405)	(942,950)	(982,656)	(831,652)	
Other	-	-	-	-	-	-	
<b>Net Change in Plan Fiduciary Net Position</b>	60,618,950	70,681,269	101,514,672	6,378,705	57,897,127	132,683,060	
<b>Plan Fiduciary Net Position - Beginning</b>	1,012,484,801	941,803,532	840,288,860	833,910,155	776,013,028	643,329,968	
<b>Plan Fiduciary Net Position - Ending (b)</b>	<u>1,073,103,751</u>	<u>1,012,484,801</u>	<u>941,803,532</u>	<u>840,288,860</u>	<u>833,910,155</u>	<u>776,013,028</u>	
<b>Net Pension Liability - Ending (a) - (b)</b>	<u>\$ 1,777,349,363</u>	<u>\$ 1,771,383,266</u>	<u>\$ 1,771,224,323</u>	<u>\$ 1,797,264,443</u>	<u>\$ 1,519,018,555</u>	<u>\$ 1,455,250,842</u>	
<b>Plan Fiduciary Net Position as a Percentage</b>							
<b>of Total Pension Liability</b>	37.65 %	36.37 %	34.71 %	31.86 %	35.44 %	34.78 %	
<b>Covered-Employee Payroll<sup>b</sup></b>	\$ 138,415,234	\$ 132,064,855	\$139,737,508	\$139,537,967	\$145,903,074	\$150,280,023	
<b>Net Pension Liability as a Percentage</b>							
<b>of Covered-Employee Payroll</b>	1,284.07 %	1,341.30 %	1,267.54 %	1,288.01 %	1,041.11 %	968.36 %	
<b>Single Discount Rate, Beginning of Year</b>	6.60 %	6.58 %	6.48 %	6.85 %	6.89 %	6.91 %	
<b>Single Discount Rate, End of Year</b>	6.34 %	6.60 %	6.58 %	6.48 %	6.85 %	6.89 %	6.91 %
<b>Long-Term Municipal Bond Rate</b>	3.13 %	3.62 %	3.56 %	2.85 %	3.80 %	4.29 %	4.63 %
<b>Long-Term Municipal Bond Rate Date</b>	June 28, 2019	June 29, 2018	June 30, 2017	June 30, 2016	June 25, 2015	June 26, 2014	June 27, 2013

<sup>a</sup>Fiscal year end 2019 change of assumptions from updates of an Experience Study for the three-year period ending June 30, 2018, and change in GASB 67/68 discount rate.

<sup>b</sup>Covered payroll is based on the requirements of GASB Statement No. 82.



# Schedules of Required Supplementary Information

## Schedule of the Net Liability Multiyear

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### Last 10 Fiscal Years (which may be built prospectively)

<b>FY Ending June 30,</b>	<b>Total Pension Liability</b>	<b>Plan Net Position</b>	<b>Net Pension Liability</b>	<b>Plan Net Position as a % of Total Pension Liability</b>	<b>Covered Payroll<sup>a</sup></b>	<b>Net Pension Liability as a % of Covered Payroll</b>
2014	\$ 2,231,263,870	\$ 776,013,028	\$ 1,455,250,842	34.78 %	\$ 150,280,023	968.36 %
2015	2,352,928,710	833,910,155	1,519,018,555	35.44 %	145,903,074	1,041.11 %
2016	2,637,553,303	840,288,860	1,797,264,443	31.86 %	139,537,967	1,288.01 %
2017	2,713,027,855	941,803,532	1,771,224,323	34.71 %	139,737,508	1,267.54 %
2018	2,783,868,067	1,012,484,801	1,771,383,266	36.37 %	132,064,855	1,341.30 %
2019	2,850,453,114	1,073,103,751	1,777,349,363	37.65 %	138,415,234	1,284.07 %

<sup>a</sup>Covered payroll is based on the requirements of GASB Statement No. 82

# Schedules of Required Supplementary Information

## Schedule of Contributions Multiyear

### Last 10 Fiscal Years

Fiscal Year	Actuarially Determined Contribution <sup>a</sup>	Actual Contribution <sup>b</sup>	Contribution Deficiency (Excess)	Covered Payroll	Actual Contribution as a % of Covered Payroll	Statutory Contribution	Statutory Contribution Deficiency/(Excess)
7/1/09 - 6/30/10	\$ 86,916,418	\$ 78,509,810	\$ 8,406,608	\$ 161,164,000	48.71%	\$ 78,832,000	\$ 322,190
7/1/10 - 6/30/11	95,490,182	62,694,460	32,795,722	169,155,000	37.06%	62,377,000	(317,460)
7/1/11 - 6/30/12	110,923,357	63,644,099	47,279,258	153,550,766	41.45%	63,628,000	(16,099)
7/1/12 - 6/30/13	125,576,795	88,239,564	37,337,231	156,142,183	56.51%	88,210,000	(29,564)
7/1/13 - 6/30/14	125,061,595	126,815,881	(1,754,286)	150,280,023	84.39%	126,808,000	(7,881)
7/1/14 - 6/30/15	124,215,990	134,039,684	(9,823,694)	145,903,074	91.87%	133,982,000	(57,684)
7/1/15 - 6/30/16	121,362,703	132,060,000	(10,697,297)	139,537,967	94.64%	132,060,000	-
7/1/16 - 6/30/17	152,699,188	131,334,000	21,365,188	139,737,508	93.99%	131,334,000	-
7/1/17 - 6/30/18	168,056,916	135,962,000	32,094,916	132,064,855	102.95%	135,962,000	-
7/1/18 - 6/30/19	169,632,403	140,518,962	29,113,441	138,415,234	101.52%	140,518,962	-

<sup>a</sup> The JRS Statutory Funding may not conform to Actuarial Standards of Practice, therefore, the actuarially determined contribution is equal to the normal cost plus an amount to amortize the unfunded actuarial accrued liability as a level percentage of total payroll. The amortization period for fiscal years 2009 through 2016 is an open 30-year period, and a closed 25-year period for fiscal years on and after 2017. The Actuarially Determined Contribution for each fiscal year was determined as of the valuation two years prior.

<sup>b</sup> The actual contributions for FYE June 30, 2009 through June 30, 2017 were obtained from the System's comprehensive annual financial reports. The actual contributions for FYE June 30, 2018 and later were provided by the System.

# Schedules of Required Supplementary Information

## Notes to Schedule of Contributions

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<b>Actuarial Valuation Date:</b>	June 30, 2017
Notes	Actuarially determined contribution rates and Statutory contribution rates are calculated as of June 30, which is 12 months prior to the beginning of the fiscal year in which the contributions will be made.
<b>Methods and Assumptions Used to Determine Contribution Rates for Fiscal Year ended June 30, 2019:</b>	
Actuarial Cost Method	Projected Unit Credit
Amortization Method	<p><b>Statutory Contributions:</b> Equal to the level percentage of pay contributions determined so that the Plan attains a 90 percent funded ratio by the end of 2045. An amortization payment is not directly calculated. The amortization payment is the difference between the total statutory contribution and the employer normal cost contribution.</p> <p><b>Actuarially Determined Contributions (ADC):</b> The ADC for fiscal years ending on and after June 30, 2017, is calculated as the employer's normal cost plus a 25-year level percent of capped payroll closed-period amortization of the unfunded accrued liability. As of June 30, 2017, the remaining amortization period was 23 years.</p>
Asset Valuation Method	5-year smoothed market
Inflation	2.75 percent
Salary Increases	Salary increase rates based on age-related productivity and merit rates plus inflation.
Postretirement Benefit Increases	Postretirement benefit increases of 3.00 percent, compounded, for Tier 1 and 3.00 percent or one-half of the annual increase in the Consumer Price Index, whichever is less, simple, for Tier 2.
Investment Rate of Return	6.75 percent
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the June 30, 2016, actuarial valuation pursuant to an experience study of the period July 1, 2012, to June 30, 2015.
Mortality	<p>Post-retirement: RP-2014 White Collar Healthy Annuitant mortality table, sex distinct, with rates set forward one year for males and set back one year for females and generational mortality improvements using the MP-2014 two-dimensional mortality improvement scales.</p> <p>Pre-retirement: RP-2014 White Collar Total Employee mortality table, sex distinct, and generational mortality improvement using MP-2014 two-dimensional mortality improvement scales.</p>

## SECTION D

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### **NOTES TO FINANCIAL STATEMENTS**

Auditor's Note – This information is intended to assist in preparation of the financial statements of the Judges' Retirement System of Illinois. Financial statements are the responsibility of management, subject to the auditor's review. Please let us know if the auditor recommends any changes.

# Sensitivity of Net Pension Liability to the Single Discount Rate Assumptions

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## Single Discount Rate

A Single Discount Rate of 6.34 percent was used to measure the total pension liability. This Single Discount Rate was based on an expected rate of return on pension plan investments of 6.50 percent and a municipal bond rate of 3.13 percent. The projection of cash flows used to determine this Single Discount Rate assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the difference between statutory contribution rates and the member rate. Based on these assumptions, the pension plan's fiduciary net position and future contributions were sufficient to finance the benefit payments through the year 2063. As a result, the long-term expected rate of return on pension plan investments was applied to projected benefit payments through the year 2063, and the municipal bond rate was applied to all benefit payments after that date.

Regarding the sensitivity of the net pension liability to changes in the Single Discount Rate, the following presents the plan's net pension liability, calculated using a Single Discount Rate of 6.34 percent, as well as what the plan's net pension liability would be if it were calculated using a Single Discount Rate that is one percent lower or one percent higher:

## Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

1% Decrease	Current Single Discount Rate Assumption	1% Increase
5.34%	6.34%	7.34%
\$ 2,095,825,550	\$ 1,777,349,363	\$ 1,507,668,080

## Summary of Population Statistics

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Inactive Plan Members or Beneficiaries Currently Receiving Benefits	1,262
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	26
Active Plan Members	<u>956</u>
Total Plan Members	2,244

*Additional information about the member data used is included in the June 30, 2019, actuarial valuation report.*

## SECTION E

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### **GASB STATEMENT NO. 68 PENSION EXPENSE**

# Schedule of Changes in Net Pension Liability and Related Ratios

Fiscal year End 6/30

	2019	2018
<b>A. Total Pension Liability</b>		
1. Service Cost Including Pension Plan Administrative Expense	\$ 50,008,782	\$ 53,221,872
2. Interest on the Total Pension Liability	180,187,890	175,399,302
3. Changes of Benefit Terms	-	-
4. Difference Between Expected and Actual Experience of the Total Pension Liability	37,888,398	6,190,925
5. Changes of Assumptions	(42,248,829)	(14,445,948)
6. Benefit Payments, Including Refunds of Employee Contributions	(158,340,657)	(148,628,654)
7. Pension Plan Administrative Expense	(910,537)	(897,285)
<b>8. Net Change in Total Pension Liability</b>	<b>\$ 66,585,047</b>	<b>\$ 70,840,212</b>
<b>9. Total Pension Liability – Beginning</b>	<b>2,783,868,067</b>	<b>2,713,027,855</b>
<b>10. Total Pension Liability – Ending</b>	<b>\$ 2,850,453,114</b>	<b>\$ 2,783,868,067</b>
<b>B. Plan Fiduciary Net Position</b>		
1. Contributions – Employer	\$ 140,518,962	\$ 135,962,000
2. Contributions – Employee	14,610,446	14,295,562
3. Net Investment Income	64,740,736	69,949,646
4. Benefit Payments, Including Refunds of Employee Contributions	(158,340,657)	(148,628,654)
5. Pension Plan Administrative Expense	(910,537)	(897,285)
6. Other	-	-
<b>7. Net Change in Plan Fiduciary Net Position</b>	<b>\$ 60,618,950</b>	<b>\$ 70,681,269</b>
<b>8. Plan Fiduciary Net Position – Beginning</b>	<b>1,012,484,801</b>	<b>941,803,532</b>
<b>9. Plan Fiduciary Net Position – Ending</b>	<b>\$ 1,073,103,751</b>	<b>\$ 1,012,484,801</b>
<b>C. Net Pension Liability</b>	<b>\$ 1,777,349,363</b>	<b>\$ 1,771,383,266</b>
<b>D. Plan Fiduciary Net Position as a Percentage of the Total Pension Liability</b>	<b>37.65%</b>	<b>36.37%</b>
<b>E. Covered-Employee Payroll<sup>a</sup></b>	<b>\$ 138,415,234</b>	<b>\$ 132,064,855</b>
<b>F. Net Pension Liability as a Percentage of Covered-Employee Payroll</b>	<b>1284.07%</b>	<b>1341.30%</b>

<sup>a</sup>Covered payroll is based on the requirements of GASB Statement No. 82.



# Pension Expense under GASB Statement No. 68

## Plan Year Ended June 30, 2019,

### Applicable to Fiscal Year Ending June 30, 2020

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#### A. Expense

1. Service Cost Including Pension Plan Administrative Expense	\$ 50,008,782
2. Interest on the Total Pension Liability	180,187,890
3. Current-Period Benefit Changes	-
4. Employee Contributions (made negative for addition here)	(14,610,446)
5. Projected Earnings on Plan Investments (made negative for addition here)	(68,205,885)
7. Other Changes in Plan Fiduciary Net Position	-
8. Recognition of Outflow/(Inflow) of Resources due to Liabilities	16,126,972
9. Recognition of Outflow/(Inflow) of Resources due to Assumption Changes	29,836,184
10. Recognition of Outflow/(Inflow) of Resources due to Assets	8,101,850
<b>11. Total Pension Expense</b>	<b>\$ 201,445,347</b>

#### B. Reconciliation of Net Pension Liability

<b>1. Net Pension Liability Beginning of Year</b>	<b>\$ 1,771,383,266</b>
2. Total Pension Expense	201,445,347
3. Employer Contributions (made negative for addition here)	(140,518,962)
4. Change in Deferred Liability Experience (Inflows)/Outflows	21,761,426
5. Change in Deferred Assumption Changes Experience (Inflows)/Outflows	(72,085,013)
6. Change in Deferred Investment Experience (Inflows)/Outflows	(4,636,701)
<b>7. Net Pension Liability End of Year</b>	<b>\$ 1,777,349,363</b>

The pension expense is based on a measurement date of June 30, 2019, but will be used for fiscal year ending June 30, 2020. Our understanding is that JRS is a single employer defined benefit pension plan. If the sponsor has component units, a proportionate share allocation of the pension expense and net pension liability under paragraph 342 of GASB Statement No. 68 may be required.

# Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Plan

## Year Ended June 30, 2019\*

### A. Outflows and (Inflows) of Resources Recognized in Current and Future Pension Expenses as of Plan Year End June 30, 2019

Experience (Gain)/Loss	Original Balance	Date Established	Original Recognition Period/ Amortization Factor	Amount Recognized in Past Pension Expenses	Amount Recognized in Current Pension Expense	Deferred (Inflows) to be Recognized in Future Pension Expenses	Deferred Outflows to be Recognized in Future Pension Expenses
1. Differences Between Expected and Actual Non-Investment Experience	\$ 37,888,398	June 30, 2019	4.0718	\$ -	\$ 9,305,073	\$ -	\$ 28,583,325
	6,190,925	June 30, 2018	4.1622	1,487,416	1,487,417	-	3,216,092
	23,042,316	June 30, 2017	4.1499	11,104,998	5,552,499	-	6,384,819
	(3,260,012)	June 30, 2016	4.0593	(2,409,291)	(803,097)	(47,624)	-
	28,713,856	June 30, 2015	4.0832	28,128,776	585,080	-	-
	<u>\$ 92,575,483</u>		<u>4.1053</u>	<u>\$ 38,311,899</u>	<u>\$ 16,126,972</u>	<u>\$ (47,624)</u>	<u>\$ 38,184,236</u>
2. Assumption Changes	\$ (42,248,829)	June 30, 2019	4.0718	\$ -	\$ (10,375,959)	\$ (31,872,870)	\$ -
	(14,445,948)	June 30, 2018	4.1622	(3,470,748)	(3,470,748)	(7,504,452)	-
	(29,511,474)	June 30, 2017	4.1499	(14,222,740)	(7,111,370)	(8,177,364)	-
	205,404,829	June 30, 2016	4.0593	151,803,141	50,601,047	-	3,000,641
	9,482,302	June 30, 2015	4.0832	9,289,088	193,214	-	-
	<u>\$ 128,680,880</u>		<u>4.1053</u>	<u>\$ 143,398,741</u>	<u>\$ 29,836,184</u>	<u>\$ (47,554,686)</u>	<u>\$ 3,000,641</u>
3. Difference Between Expected and Actual Investment Earnings	\$ 3,465,149	June 30, 2019	5.0000	\$ -	\$ 693,030	\$ -	\$ 2,772,119
	(6,353,618)	June 30, 2018	5.0000	(1,270,724)	(1,270,724)	(3,812,170)	-
	(40,953,541)	June 30, 2017	5.0000	(16,381,416)	(8,190,708)	(16,381,417)	-
	65,286,382	June 30, 2016	5.0000	39,171,828	13,057,276	-	13,057,278
	19,064,884	June 30, 2015	5.0000	15,251,908	3,812,976	-	-
	<u>\$ 40,509,256</u>		<u>5.0000</u>	<u>\$ 36,771,596</u>	<u>\$ 8,101,850</u>	<u>\$ (20,193,587)</u>	<u>\$ 15,829,397</u>
4. Total	<u>\$ 261,765,619</u>			<u>\$ 218,482,236</u>	<u>\$ 54,065,006</u>	<u>\$ (67,795,897)</u>	<u>\$ 57,014,274</u>

### B. Deferred Outflows and Deferred (Inflows) of Resources by Year to be Recognized in Future Pension Expenses

Year Ending June 30	Differences Between Expected and Actual Non-Investment Experience	Assumption Changes	Differences Between Expected and Actual Investment Experience	Year Ending June 30	Deferred Outflows of Resources	Deferred (Inflows) of Resources	Net Deferred Outflows/ (Inflows) of Resources
2020	\$ 16,297,365	\$ (17,957,436)	\$ 4,288,876	2020	\$ 33,095,938	\$ (30,467,133)	\$ 2,628,805
2021	11,624,810	(14,912,701)	(8,768,403)	2021	12,317,840	(24,374,134)	(12,056,294)
2022	9,546,331	(10,938,915)	(577,692)	2022	10,239,361	(12,209,637)	(1,970,276)
2023	668,106	(744,993)	693,029	2023	1,361,135	(744,992)	616,143
2024	-	-	-	2024	-	-	-
Thereafter	-	-	-	Thereafter	-	-	-
Total	<u>\$ 38,136,612</u>	<u>\$ (44,554,045)</u>	<u>\$ (4,364,190)</u>	Total	<u>\$ 57,014,274</u>	<u>\$ (67,795,896)</u>	<u>\$ (10,781,622)</u>

\*Based on a measurement date of June 30, 2019, but will be used for fiscal year ending June 30, 2020. Employer's proportionate share of calculations of the net pension liability, pension expense and deferred inflows and outflows are outside the scope of this report.

Numbers may not add due to rounding.

## SECTION F

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### SUMMARY OF RETIREMENT SYSTEM PLAN PROVISIONS

## Summary of Retirement System Plan Provisions (as of June 30, 2019)

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1. **Participation.** Participation in the system is mandatory when a person first becomes a judge, unless an "Election Not to Participate" is filed by the judge within 30 days of the date of notification of this option.
2. **Member Contributions.** All members of the system are required to contribute to the system the following percentage of their salaries:

Retirement Annuity	7.5 percent
Automatic Annuity Increase	1.0
Survivor's Annuity	2.5
Total	11.0 percent

All judges who become participants after December 31, 1992, are required to make contributions toward the survivor's annuity unless they file an election not to participate in the survivor's annuity benefit, in which case the total participant contribution rate is 8.5 percent of salary.

3. **Discontinuance of Contributions.** A participant who becomes eligible to receive the maximum rate of annuity may elect to discontinue contributions and have his or her benefits "fixed" based upon the final rate of salary immediately prior to the effective date of such election. This election, once made, is irrevocable.
4. **Election to Contribute Only on Increases in Salary.** A participant who has attained age 60 and continues to serve as a judge after becoming eligible to receive the maximum rate of annuity and has not elected to discontinue contributing to the system may elect to make contributions based only on the amount of the increases in salary received by the judge on or after the date of the election.
5. **Retirement Annuity – Eligibility.** A judge who has at least 10 years of service may retire with an unreduced retirement annuity upon attainment of age 60. A judge with at least 6 years of service may retire with an unreduced retirement annuity upon attainment of age 62.

A judge with at least 10 years of service may retire upon attainment of age 55, with the amount of the retirement annuity reduced 1/2 of 1 percent for each month that the judge is under age 60 if the judge has less than 28 years of service. This penalty for retirement before age 60 is reduced by 5/12 of 1 percent for every month of service in the System in excess of 20 years.

6. **Retirement Annuity – Amount.** The retirement annuity is determined according to the following formula based upon the final rate of salary:
  - 3 ½ percent for each of the first 10 years of service; plus
  - 5 percent for each year of service in excess of 10

The maximum retirement annuity is 85 percent of the final rate of salary.

7. **Automatic Increase In Retirement Annuity.** Annual automatic increases of 3 percent of the current amount of retirement annuity are provided. The initial increase is effective in the month of January of the year next following the year in which the first anniversary of retirement occurs.

## Summary of Retirement System Plan Provisions (as of June 30, 2019)

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8. **Temporary Total Disability.** A member with at least 2 years of service who becomes totally disabled and unable to perform his or her duties as a judge is entitled to a temporary disability benefit equal to 50 percent of salary payable during the period of disability but not beyond the end of the term of office.
9. **Total and Permanent Disability.** A member with at least 10 years of service who becomes totally and permanently disabled while serving as a judge is eligible to commence receiving his or her retirement annuity without reduction regardless of age.
10. **Survivor's Annuity – Participation and Eligibility.** A married judge, an unmarried judge who becomes a participant after December 31, 1992, or a judge who marries after becoming a participant is subject to the provisions relating to the survivor's annuity unless he or she files a written notice of election not to participate in the survivor's annuity.

An active judge who is not contributing for the survivor's annuity and later marries or remarries may receive partial credit for the survivor's annuity, thereby providing a prorated benefit for his or her spouse by contributing to the survivor's annuity benefit prospectively from the date of marriage.

A surviving spouse without children is eligible for survivor benefits at age 50 or over provided marriage to the member had been in effect for at least one year immediately prior to the member's death.

A surviving spouse with unmarried eligible children of the member is eligible for a survivor's annuity benefit at any age provided the above marriage requirements have been met. When all children are disqualified because of death, marriage or attainment of age 18, or age 22 in the case of a full-time student, the spouse's benefit is suspended if the spouse is under age 50 until the attainment of such age.

Children of the member who are under age 18 or under age 22 and a full-time student or who are over age 18 and dependent because of a physical or mental disability are eligible for survivor benefits. Legally adopted children are eligible for survivor benefits on the same basis as other children.

If the member dies in service as a judge, the member must have at least 1 1/2 years of service credit for survivor's annuity eligibility. If death occurs after termination of service, the deceased member must have at least 10 years of service credit for survivor's annuity eligibility.

11. **Survivor's Annuity – Amount.** (a) Upon the death of an annuitant, his or her surviving spouse shall be entitled to a survivor's annuity of 66-2/3 percent of the annuity the annuitant was receiving immediately prior to his or her death.  
  
(b) Upon the death of a judge while in service, the surviving spouse shall receive a survivor's annuity of 66-2/3 percent of the annuity earned by the judge as of the date of death, or 7 ½ percent of the judge's last salary, whichever is greater.

## Summary of Retirement System Plan Provisions (as of June 30, 2019)

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(c) Upon the death of a former judge who had terminated service with at least 10 years of service, his or her surviving spouse shall be entitled to a survivor's annuity of  $66\frac{2}{3}$  percent of the annuity earned by the deceased member as of the date of death.

(d) Upon the death of an annuitant, a judge in service, or a former judge who had terminated service with at least 10 years of service, each surviving child unmarried and under the age of 18, or age 22 in the case of a full-time student, or disabled shall be entitled to a child's annuity in an amount equal to 5 percent of the decedent's final salary, not to exceed in total for all such children the greater of 20 percent of final salary or  $66\frac{2}{3}$  percent of the earned retirement annuity.

(e) Survivor's annuities are subject to annual automatic increases of 3 percent of the current amount of annuity.

12. Refund of Contributions. A participant who ceases to be a judge may apply for and receive a refund of his or her total contributions to the system, provided he or she is not then eligible to receive a retirement annuity.

A participant who becomes unmarried, either before or after retirement, is entitled to a refund of contributions made for the survivor's annuity.

### Judges Who First Become Participants on or after January 1, 2011 ("Tier 2")

The following changes to the above provisions apply to judges who first become participants on or after January 1, 2011:

1. The highest salary for annuity purposes is equal to the average monthly salary obtained by dividing the participant's total salary during the 96 consecutive months of service within the last 120 months of service in which the total compensation was the highest by the number of months in that period.
2. The required contributions shall not exceed the contributions that would be due on the highest salary for annuity purposes.
3. For 2011, the final average salary is limited to the Social Security wage base of \$106,800. Limitations for future years shall automatically be increased or decreased, as applicable, by a percentage change in the Consumer Price Index-U during the preceding 12-month calendar year.
4. A participant is eligible to retire with unreduced benefits after attainment of age 67 with at least 8 years of service credit. However, a participant may elect to retire at age 62 with at least 8 years of service credit and receive a retirement annuity reduced by one-half of 1 percent for each month that his or her age is under 67.

## Summary of Retirement System Plan Provisions (as of June 30, 2019)

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5. The annual retirement annuity provided is equal to 3 percent of the participant's final average salary for each year of service. The maximum retirement annuity payable shall be 60 percent of the participant's final average salary.
6. Automatic annual increases are provided in the retirement annuity then being paid equal to 3 percent or the annual change in the Consumer Price Index for all Urban Consumers, whichever is less. Such increases are payable in the January next following attainment of age 67 and in January of each year thereafter.
7. Automatic annual increases are provided in the survivor annuity then being paid equal to 3 percent or the annual change in the Consumer Price Index for all Urban Consumers, whichever is less. Such increases are payable on each January 1 occurring on or after attainment of age 67.
8. The retirement annuity being paid is suspended when an annuitant accepts full time employment in a position covered under the Judges' Retirement System or any other article of the Illinois Pension Code. Upon termination of the employment, the retirement annuity shall resume and, if appropriate, be recalculated.
9. Salary and COLA development for members hired on or after January 1, 2011, are shown in the table below:

Year Ending	CPI-U	COLA	Maximum Annual Pensionable Earnings
2011		3.00%	\$106,800.00
2012	3.90%	3.00%	\$110,004.00
2013	2.00%	2.00%	\$112,204.08
2014	1.20%	1.20%	\$113,550.53
2015	1.70%	1.70%	\$115,480.89
2016	0.00%	0.00%	\$115,480.89
2017	1.50%	1.50%	\$117,213.10
2018	2.20%	2.20%	\$119,791.79
2019	2.30%	2.30%	\$122,547.00

## SECTION G

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### **ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS**



### Valuation Methods — Calculation of the Total Pension Liability

**Actuarial Cost Method** – Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using an **Individual Entry-Age Actuarial Cost Method** having the following characteristics:

- (i) The annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement; and
- (ii) Each annual normal cost is a constant percentage of the member's year by year projected covered pay.

### Valuation Methods — Calculation of the Statutory Contributions, Actuarial Cost Method Adopted June 30, 1989, by Statute

The projected unit credit normal cost method is used. Under this method, the projected pension at retirement age is first calculated and the value thereof at the individual member's current or attained age is determined. The normal cost for the member for the current year is equal to the value so determined divided by the member's projected service at retirement. The normal cost for the plan for the year is the sum of the individual normal costs.

The actuarial liability at any point in time is the value of the projected pensions at that time less the value of future normal costs.

For ancillary benefits for active members, in particular death and survivor benefits, termination benefits, and the postretirement increases, the same procedure as outlined above is followed.

Estimated annual administrative expenses are added to the normal cost.

For valuation purposes, as well as projection purposes, an actuarial value of assets is used.

### Appropriation Requirements under P.A. 88-0593

The law governing the System under P.A. 88-0593 provides that:

For fiscal years 2011 through 2045, the minimum contribution to the System for each fiscal year shall be an amount determined to be sufficient to cause the total assets of the System to equal 90 percent of the total actuarial liabilities of the System by the end of fiscal year 2045. In making these determinations, the required contribution shall be calculated each year as a level-percentage-of-payroll over the years remaining to and including fiscal year 2045 and shall be determined under the projected unit credit actuarial cost method. For fiscal years 1997 through 2010, the minimum contribution to the System, as a percentage of the payroll, shall be increased in equal annual increments so that by fiscal year 2010, the contribution rate is at the same level as the contribution rate for fiscal years 2011 through 2045.

# Actuarial Assumptions, Input to Discount Rates, Mortality Assumptions, and Experience Studies

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## Most Actuarial Assumptions Adopted June 30, 2019

Actuarial assumptions are set by the Board of Trustees. Additional information regarding the rationale for the assumptions may be found in the experience review of the Judges' Retirement System for the three-year period ending June 30, 2018. All actuarial assumptions are expectations of future experience, not market measures.

### Mortality

#### *Post-Retirement Mortality*

Pub-2010 Above-Median Income General Healthy Retiree Mortality tables, sex distinct, with scaling factors of 102 percent for males and 98 percent for females, and the MP-2018 two-dimensional generational mortality improvement scale. This assumption provides a margin for future mortality improvements.

#### *Pre-Retirement Mortality, including terminated vested members prior to attaining age 50*

Pub-2010 Above-Median Income General Employee Mortality tables, sex distinct, with scaling factors of 99 percent for males and females, and the MP-2018 two-dimensional generational mortality improvement scale. This assumption provides a margin for future mortality improvements.

Future mortality improvements are reflected by projecting the base mortality tables forward from the year 2010 using the MP-2018 projection scale.

### Interest

6.50 percent per year, compounded annually, net of investment expenses.

### General Inflation

2.25 percent per year, compounded annually.

This assumption serves as the basis for the determination of Tier 2 pay cap growth and annual increases that are equal to the lesser of 3.0 percent or the annual change in the Consumer Price Index-U during the preceding 12-month calendar year.

### Marriage Assumption

80.0 percent of active and retired participants are assumed to be married.

# Actuarial Assumptions, Input to Discount Rates, Mortality Assumptions, and Experience Studies

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## Termination

Illustrative rates of withdrawal from the plan are as follows:

Age Based Withdrawal		
Age	Male	Female
30	0.0129	0.0162
35	0.0124	0.0162
40	0.0108	0.0162
45	0.0095	0.0162
50	0.0083	0.0158
55	0.0071	0.0092
60	0.0059	0.0074
65	0.0047	0.0057

It is assumed that terminated employees will not be rehired. The rates apply only to employees who have not fulfilled the service requirement necessary for retirement at any given age.

## Salary Increases

A salary increase assumption of 2.50 percent per annum, compounded annually, was used. This 2.50 percent salary increase assumption includes an inflation component of 2.25 percent per year, and a productivity/merit/promotion component of 0.25 percent per annum.

## Load for Inactive Members Eligible for Deferred Vested Pension Benefits

Deferred vested liability is increased by 10 percent to account for increases in final average salary due to participation in a reciprocal system. This assumption was developed based on the average increase in actuarial liability due to reciprocal salary increases of inactive members over the period July 1, 2012, to June 30, 2018, and will be reviewed during the next experience study.

## Disability

No assumption for disability.

## Employee Contribution Election

For purposes of the actuarial valuation, it is assumed that all judges elect to contribute only on increases in salary when they become eligible for this provision.

# Actuarial Assumptions, Input to Discount Rates, Mortality Assumptions, and Experience Studies

## Population Projection

For purposes of determining annual appropriation as a percent of total covered payroll, the size of the active group is assumed to remain level at the number of actives as of the actuarial valuation date. New entrants are assumed to enter with an average age and average pay as disclosed below. The new entrant profile is based on the averages for all current active members. The average increase in uncapped payroll for the projection period is 2.50 percent per year. The average increase in capped payroll for the projection period is 2.25 percent per year.

New Entrant Profile				
Age Group	No.	Uncapped Salary	Capped Salary	
<b>Under 20</b>				
<b>20-24</b>				
<b>25-29</b>	1	\$ 202,433	\$ 122,547	
<b>30-34</b>	26	5,458,283	3,186,222	
<b>35-39</b>	92	18,596,652	11,274,324	
<b>40-44</b>	199	39,550,362	24,386,853	
<b>45-49</b>	211	42,097,135	25,857,417	
<b>50-54</b>	159	31,556,232	19,484,973	
<b>55-59</b>	111	22,044,193	13,602,717	
<b>60-64</b>	50	9,950,780	6,127,350	
<b>65-69</b>	4	799,610	490,188	
<b>70 &amp; Over</b>				
<b>Total</b>	<b>853</b>	<b>\$ 170,255,680</b>	<b>\$ 104,532,591</b>	
<b>Avg. Salary</b>		<b>\$ 199,596</b>	<b>\$ 122,547</b>	
<b>Avg. Age</b>			<b>47.44</b>	
<b>Percent Male</b>			<b>67.29%</b>	

# Actuarial Assumptions, Input to Discount Rates, Mortality Assumptions, and Experience Studies

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## Retirement

Employees are assumed to retire in accordance with the rates shown on the following page. The rates apply only to employees who have fulfilled the service requirement necessary for retirement at any given age.

Retirement Rates	
Age	Males & Females
60	9.00%
61-65	11.00%
66-70	12.00%
70-74	13.00%
75-79	14.00%
80+	100.00%

Early Retirement Rates		
Age	Male	Female
55	5.50%	8.50%
56	5.50%	8.50%
57	5.50%	8.50%
58	5.50%	8.50%
59	5.50%	8.50%

## Assets

The Fiduciary Net Position is used for GASB reporting purposes. The asset valuation method is to project contributions is prescribed by statute, a description for this method can be found in the June 30, 2019, actuarial valuation report.

## Expenses

As estimated and advised by JRS staff, based on current expenses and expected to increase in relation to the projected capped payroll. Expenses are included in the service cost.

## Spouse's Age

The female spouse is assumed to be four years younger than the male spouse.

## Decrement Timing

All decrements are assumed to occur beginning of year.

# Actuarial Assumptions, Input to Discount Rates, Mortality Assumptions, and Experience Studies

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## Decrement Relativity

Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.

## Decrement Operation

Turnover decrements do not operate after member reaches retirement eligibility.

## Eligibility Testing

Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.

## 415(b) and 401(a)(17) Limits

No explicit assumption is made with respect to these items.

## Assumptions as a Result of Public Act 96-0889 – Tier 2 Assumptions

Members hired after December 31, 2010, are assumed to make contributions on salary up to the final average compensation cap in a given year until this plan provision or administrative procedure is clarified. State contributions, expressed as a percentage of pay, are calculated based upon capped pay.

Retirement rates for Tier 2 members to account for the change in retirement age, as follows:

Retirement Rates for Tier Two Members	
Age	Male & Female
67	30.00%
68-69	12.00%
70	13.00%
71	10.00%
72	11.00%
73	12.00%
74	13.00%
75-79	14.00%
80	100.00%

Early Retirement Rates for Tier Two Members	
Age	Males and Females
62	11.00%
63	12.00%
64	13.00%
65	14.00%
66	14.00%

## Actuarial Assumptions, Input to Discount Rates, Mortality Assumptions, and Experience Studies

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Illustrative rates of withdrawal from the plan for Tier 2 members are as follows:

Age Based Withdrawal for Tier Two Members		
Age	Male	Female
30	0.0175	0.0150
35	0.0172	0.0145
40	0.0157	0.0129
45	0.0148	0.0129
50	0.0139	0.0129
55	0.0124	0.0113
60	0.0124	0.0095
65	0.0124	0.0078

# Projection Methodology and Appropriation Requirements under P.A. 93-0002, P.A. 94-0004, P.A. 96-0043, and P.A. 100-0023

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## State Contributions under P.A. 93-0002

In general, for each year during the life of the GOB program, the state contributions to the System are to be calculated as follows:

1. Calculation of the contribution maximum
  - a. A projection of contributions will be made from the valuation date to June 30, 2045. Such projection will be based on hypothetical asset values determined using the following assumptions:
    - i) That the System had received no portion of the general obligation bond proceeds in excess of the scheduled contributions for the remainder of fiscal 2003 and for the entirety of 2004,
    - ii) That hypothetical state contributions had been made each fiscal year from 2005 through the valuation date, based on the funding process in place prior to P.A. 93-0002 (without regard to prior state minimum requirements),
    - iii) That the actual amounts of member contributions and the actual cash outflows (benefit payments, refunds and administrative expenses) for each year prior to the valuation date were realized, and
    - iv) That the hypothetical fund earned returns in each prior fiscal year equal to the rate of total return actually earned by the retirement fund in that year.
  - b. The hypothetical asset values developed in a., above, will not exceed the actual assets of the fund.
  - c. A projection of maximum contributions for each year of the GOB program will be performed each year, by reducing the contributions produced in a., above, by the respective amount of debt service allocated to the System for each year.
2. Calculation of the contribution with GOB proceeds
  - a. The basic projection of State contributions from the valuation date through June 30, 2045, will be made, taking into account all assets of the System, including the GOB proceeds.
  - b. State contribution rates (expressed as a percentage of covered pay), in the pattern required by the funding sections of the statutes, are calculated.
  - c. In those projections, the dollars of state contributions which are added to assets each year during the GOB program are limited by the contribution maximum. Because the bonds are to be liquidated by the end of fiscal 2033, there is no contribution maximum thereafter.



# **Projection Methodology and Appropriation Requirements under P.A. 93-0002, P.A. 94-0004, P.A. 96-0043, and P.A. 100-0023**

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## **State Contributions under P.A. 94-0004**

The following is an excerpt from the Illinois Compiled statutes 40 ILCS 5/18-131:

(c) Notwithstanding any other provision of this Article, the total required State contribution for fiscal year 2006 is \$29,189,400.

Notwithstanding any other provision of this Article, the total required State contribution for fiscal year 2007 is \$35,236,800.

For each State fiscal year 2008 through 2010, the State contribution to the System, as a percentage of the applicable employee payroll, shall be increased in equal annual increments from the required State contribution for State fiscal year 2007, so that by State fiscal year 2011, the State is contributing at a rate otherwise required under this Section.

## **State Contributions under P.A. 96-0043**

The following is an excerpt from the Illinois Compiled statutes 40 ILCS 5/18-131:

(d) For purposes of determining the required State contribution to the System, the value of the System's assets shall be equal to the actuarial value of the System's assets, which shall be calculated as follows:

As of June 30, 2008, the actuarial value of the System's assets shall be equal to the market value of the assets as of that date. In determining the actuarial value of the System's assets for fiscal years after June 30, 2008, any actuarial gains or losses from investment return incurred in a fiscal year shall be recognized in equal annual amounts over the 5-year period following that fiscal year.

(e) For purposes of determining the required State contribution to the system for a particular year, the actuarial value of assets shall be assumed to earn a rate of return equal to the system's actuarially assumed rate of return.

## **State Contributions under P.A. 100-0023**

Public Act ("P.A.") 100-0023, effective July 6, 2017, modified the State's funding policy to include smoothing State contribution rate increases or decreases due to changes in actuarial assumptions, including investment return assumptions, over a five-year period in equal annual amounts beginning in fiscal year 2018. In addition, changes in actuarial or investment assumptions that increased or decreased the State contribution rate in fiscal years 2014 through 2017 are to be smoothed over a five-year period in equal annual amounts, applying only to the portion of the five year phase-in that is applicable to fiscal years on and after 2018.

# Projection Methodology and Appropriation Requirements under P.A. 93-0002, P.A. 94-0004, P.A. 96-0043 and P.A. 100-0023

## Phase-in of the Financial Impact of Assumption Changes

Following is a table with the recognition schedule for the phase-in of actuarial assumption changes required under Public Act 100-0023. The following actuarial assumption changes were made:

1. Beginning with the June 30, 2013, actuarial valuation, there were changes to the economic and demographic assumptions.
2. Beginning with the June 30, 2016, actuarial valuation, there were changes to the economic and demographic assumptions.
3. Beginning with the June 30, 2018, actuarial valuation, there were changes to the economic assumptions.
4. Beginning with the June 30, 2019, actuarial valuation, there were changes to the economic and demographic assumptions.

Valuation Year Ending June 30,	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Applicable Fiscal Year Ending June 30,	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
\$ in Millions											
After Impact of GOB Proceeds											
Contribution Before Assumption Change											
(1) Contribution Dollar	\$ 127.624	\$ -	\$ -	\$ 132.782	\$ -	\$ 143.976	\$ 149.827				
(2) Contribution Rate	76.115%	0.000%	0.000%	82.414%	0.000%	91.511%	94.872%				
Contribution After Assumption Change											
(3) Contribution Dollar	\$ 133.982	\$ -	\$ -	\$ 146.767	\$ -	\$ 145.223	\$ 146.667				
(4) Contribution Rate	79.961%	0.000%	0.000%	91.395%	0.000%	92.528%	93.009%				
(5) Assumption Change Impact as a Percentage of Capped Payroll [(4) - (2)]	3.846%	0.000%	0.000%	8.981%	0.000%	1.017%	-1.863%				
(6) Assumption Change Impact Recognized This Year (5-year Recognition)											
(6a) From This Year	0.769%	0.000%	0.000%	1.796%	0.000%	0.203%	-0.373%				
(6b) From One Year Ago	0.000%	0.769%	0.000%	0.000%	1.796%	0.000%	0.203%	-0.373%			
(6c) From Two Years Ago	0.000%	0.000%	0.769%	0.000%	0.000%	1.796%	0.000%	0.203%	-0.373%		
(6d) From Three Years Ago	0.000%	0.000%	0.000%	0.769%	0.000%	0.000%	1.796%	0.000%	0.203%	-0.373%	
(6e) From Four Years Ago	0.000%	0.000%	0.000%	0.000%	0.770%	0.000%	0.000%	1.797%	0.000%	0.205%	-0.371%
(6f) Total Recognized Assumption Change Impact	0.769%	0.769%	0.769%	2.565%	2.566%	1.999%	1.626%	1.627%	-0.170%	-0.168%	-0.371%

## SECTION H

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### **CALCULATION OF THE SINGLE DISCOUNT RATE**

## Calculation of the Single Discount Rate

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GASB Statements Nos. 67 and 68 include a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the Fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses, and investment returns are projected into the future. The Plan Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the assumed valuation discount rate is used. In years where assets are not projected to be sufficient to meet benefit payments, the use of a municipal bond rate is required, as described in the following paragraph.

The Single Discount Rate (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 6.50 percent; the municipal bond rate is 3.13 percent; and the resulting Single Discount Rate is 6.34 percent.

The sponsor finances benefit using a funding policy defined in state statute. Sponsor contributions are calculated as a level percentage of capped payroll contributions needed to attain a funded status of 90 percent in 2045 under the Projected Unit Credit cost method. After 2045, the sponsor makes a contribution such that the funded status remains at 90 percent. The statutory contribution does not explicitly separate projected employer contributions between current and future plan members.

For purposes of developing the Single Discount Rate, we have projected actuarial liabilities on an Entry Age Normal basis, and compared against projected market value of assets. We have assumed the actuarial liability for future members will be fully financed, to the extent that assets are available, and any remaining asset will be assigned to current plan members. Based on this assignment of assets and employer contributions, plan assets assigned to current plan members are projected to be depleted by 2063.

The tables in this section provide background for the development of the Single Discount Rate.

The following tables show the assignment of assets and employer contributions and the projection of assets for current members as of the valuation date. Our projections assume the sponsor will make the required statutory contributions. The projections are based on the statutory funding projections performed during the June 30, 2019, actuarial valuation.

Total administrative expenses are assumed to increase at the same rate of projected capped payroll increases. Total administrative expenses are allocated between current and future hires by total payroll.

**The projections in this report are strictly for the purpose of determining the GASB Single Discount Rate and are different from a funding projection for the ongoing plan.**

# Projection of Funded Status and Assignment of Assets

PYE 6/30	Future Member			Funded Ratio			Funded Ratio	
	Open Group EAN	Closed Group EAN	EAN Actuarial	Open Group	Future Member	Closed Group	Current	Future
	Actuarial Liability	Actuarial Liability	Liability	Assets	Assigned Assets	Assigned Assets	Members	Members
	(a)	(b)	(c)=(a)-(b)	(d)	(e)=min[(c),(d)]	(f)=(d)-(e)	(g)=(f)/(b)	(h)=(e)/(c)
2019	\$ 2,807,136,820	\$ 2,807,136,820	\$ -	\$ 1,073,103,751	\$ -	\$ 1,073,103,751	38.23%	0.00%
2020	2,862,006,908	2,862,006,909	-	1,129,303,607	-	1,129,303,607	39.46%	0.00%
2021	2,911,408,783	2,909,698,159	1,710,623	1,186,158,271	1,710,623	1,184,447,648	40.71%	100.00%
2022	2,954,869,631	2,949,734,354	5,135,276	1,241,679,398	5,135,276	1,236,544,121	41.92%	100.00%
2023	2,991,431,129	2,981,086,405	10,344,724	1,291,224,200	10,344,724	1,280,879,476	42.97%	100.00%
2024	3,021,051,332	3,003,476,992	17,574,339	1,335,526,326	17,574,339	1,317,951,987	43.88%	100.00%
2025	3,043,432,772	3,016,498,145	26,934,627	1,374,535,694	26,934,627	1,347,601,067	44.67%	100.00%
2026	3,058,722,434	3,020,067,205	38,655,228	1,408,826,505	38,655,228	1,370,171,277	45.37%	100.00%
2027	3,066,250,765	3,013,398,767	52,851,998	1,437,958,299	52,851,998	1,385,106,301	45.96%	100.00%
2028	3,067,327,574	2,997,491,471	69,836,103	1,462,261,812	69,836,103	1,392,425,709	46.45%	100.00%
2029	3,061,651,456	2,972,131,003	89,520,453	1,482,681,299	89,520,453	1,393,160,846	46.87%	100.00%
2030	3,049,257,326	2,937,234,977	112,022,349	1,499,185,366	112,022,349	1,387,163,017	47.23%	100.00%
2031	3,031,088,387	2,893,643,185	137,445,202	1,512,700,127	137,445,202	1,375,254,925	47.53%	100.00%
2032	3,006,665,591	2,840,897,126	165,768,465	1,524,539,466	165,768,465	1,358,771,001	47.83%	100.00%
2033	2,976,785,335	2,779,694,920	197,090,415	1,536,136,586	197,090,415	1,339,046,171	48.17%	100.00%
2034	2,942,053,167	2,710,608,849	231,444,318	1,552,442,301	231,444,318	1,320,997,983	48.73%	100.00%
2035	2,903,245,876	2,634,372,066	268,873,809	1,570,904,473	268,873,809	1,302,030,664	49.42%	100.00%
2036	2,860,808,526	2,551,467,978	309,340,548	1,592,569,736	309,340,548	1,283,229,188	50.29%	100.00%
2037	2,815,106,372	2,462,274,752	352,831,620	1,618,407,027	352,831,620	1,265,575,408	51.40%	100.00%
2038	2,767,066,712	2,367,734,502	399,332,210	1,649,755,159	399,332,210	1,250,422,949	52.81%	100.00%
2039	2,717,327,600	2,268,580,924	448,746,676	1,687,967,028	448,746,676	1,239,220,352	54.63%	100.00%
2040	2,666,440,232	2,165,447,032	500,993,200	1,734,326,764	500,993,200	1,233,333,564	56.96%	100.00%
2041	2,615,545,089	2,059,594,681	555,950,409	1,790,477,047	555,950,409	1,234,526,639	59.94%	100.00%
2042	2,565,129,971	1,951,709,995	613,419,976	1,857,824,837	613,419,976	1,244,404,861	63.76%	100.00%
2043	2,515,990,215	1,842,724,040	673,266,175	1,937,866,867	673,266,175	1,264,600,693	68.63%	100.00%
2044	2,468,728,322	1,733,411,680	735,316,642	2,032,074,104	735,316,642	1,296,757,462	74.81%	100.00%
2045	2,423,939,193	1,624,542,719	799,396,473	2,141,949,490	799,396,473	1,342,553,017	82.64%	100.00%
2046	2,382,246,649	1,516,909,782	865,336,867	2,103,445,869	865,336,867	1,238,109,001	81.62%	100.00%
2047	2,344,274,094	1,411,302,475	932,971,619	2,068,381,229	932,971,619	1,135,409,609	80.45%	100.00%
2048	2,310,313,892	1,308,196,808	1,002,117,084	2,036,914,133	1,002,117,084	1,034,797,049	79.10%	100.00%
2049	2,280,924,088	1,208,303,133	1,072,620,955	2,009,522,702	1,072,620,955	936,901,747	77.54%	100.00%
2050	2,256,331,821	1,112,045,244	1,144,286,577	1,986,423,620	1,144,286,577	842,137,043	75.73%	100.00%
2051	2,236,663,040	1,019,696,137	1,216,966,903	1,967,724,779	1,216,966,903	750,757,877	73.63%	100.00%
2052	2,222,179,122	931,643,237	1,290,535,885	1,953,657,751	1,290,535,885	663,121,866	71.18%	100.00%
2053	2,213,007,152	848,156,720	1,364,850,432	1,944,338,904	1,364,850,432	579,488,472	68.32%	100.00%
2054	2,209,204,116	769,442,184	1,439,761,932	1,939,820,066	1,439,761,932	500,058,135	64.99%	100.00%
2055	2,210,710,892	695,589,712	1,515,121,180	1,940,048,959	1,515,121,180	424,927,780	61.09%	100.00%
2056	2,217,375,625	626,552,099	1,590,823,526	1,944,892,462	1,590,823,526	354,068,935	56.51%	100.00%
2057	2,229,019,409	562,250,966	1,666,768,443	1,954,187,836	1,666,768,443	287,419,392	51.12%	100.00%
2058	2,245,522,603	502,656,425	1,742,866,178	1,967,825,499	1,742,866,178	224,959,321	44.75%	100.00%
2059	2,266,661,141	447,645,705	1,819,015,436	1,985,609,219	1,819,015,436	166,593,782	37.22%	100.00%
2060	2,292,223,305	397,086,422	1,895,136,882	2,007,350,178	1,895,136,882	112,213,296	28.26%	100.00%
2061	2,321,937,310	350,779,695	1,971,157,615	2,032,804,321	1,971,157,615	61,646,706	17.57%	100.00%
2062	2,355,575,002	308,540,443	2,047,034,559	2,061,763,809	2,047,034,559	14,729,250	4.77%	100.00%
2063	2,392,920,205	270,197,993	2,122,722,212	2,094,035,383	2,094,035,383	-	0.00%	98.65%
2064	2,433,729,150	235,543,354	2,198,185,796	2,129,400,164	2,129,400,164	-	0.00%	96.87%
2065	2,477,804,369	204,394,697	2,273,409,672	2,167,679,782	2,167,679,782	-	0.00%	95.35%
2066	2,524,932,564	176,547,568	2,348,384,996	2,208,682,713	2,208,682,713	-	0.00%	94.05%
2067	2,574,903,170	151,786,463	2,423,116,707	2,252,218,573	2,252,218,573	-	0.00%	92.95%

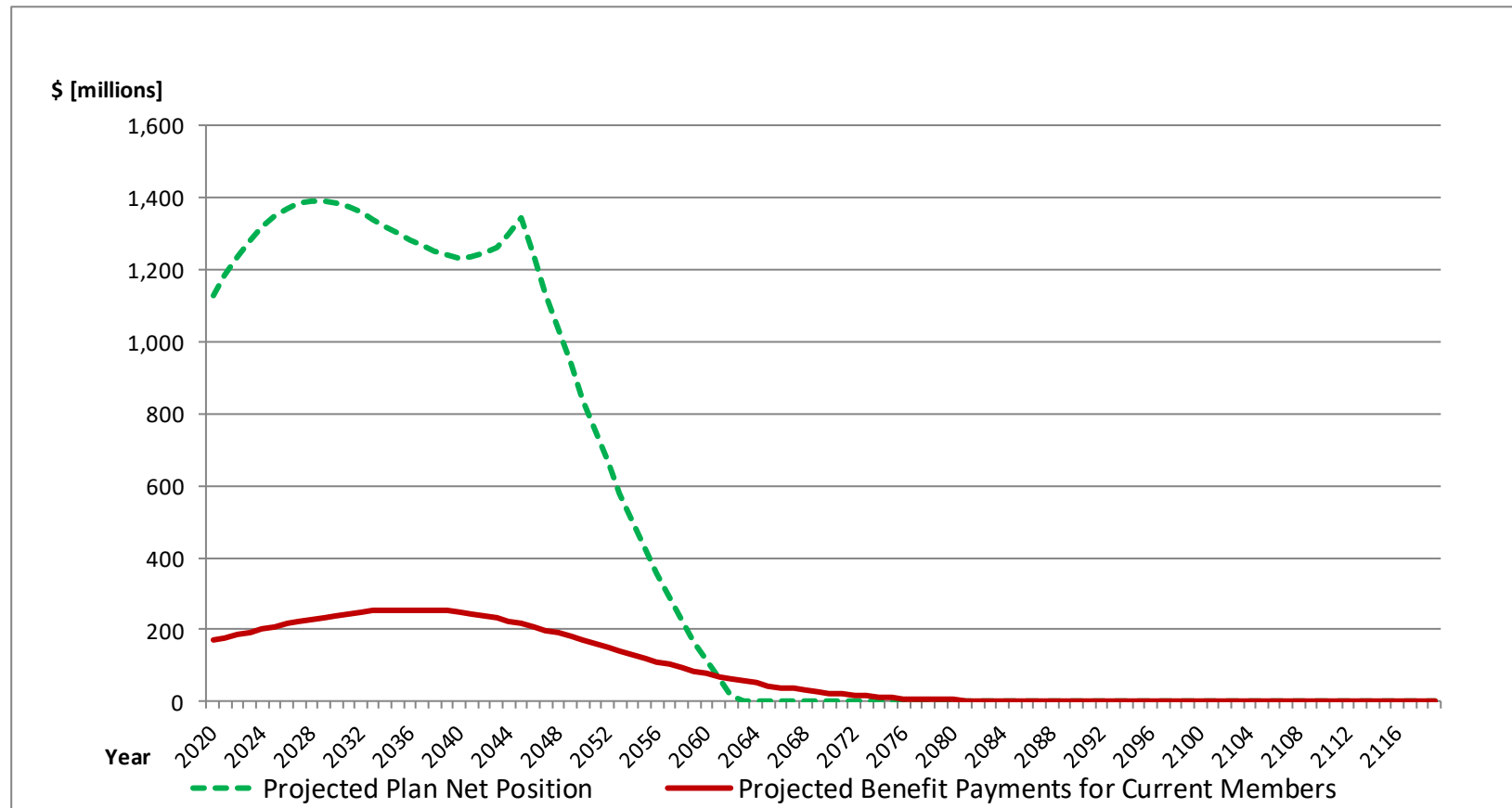
# Current Member Projection of Assets and Assignment of Employer Contributions

PYE 6/30	Assets (boy)	Member Contributions	Administrative Expenses	Benefit Payments	Assigned Employer Contribution	Income on Cash Flow	Income on Assigned Contribution	Total Investment Income	Assets (eoy)
2020	\$ 1,073,103,751	\$ 13,833,308	\$ 973,550	\$ 170,151,581	\$ 144,160,000	\$ 64,720,234	\$ 4,611,444	\$ 69,331,678	\$ 1,129,303,607
2021	1,129,303,607	13,184,579	928,107	177,748,900	147,797,757	68,110,901	4,727,810	72,838,711	1,184,447,648
2022	1,184,447,648	12,234,540	880,352	185,421,760	149,946,541	71,420,959	4,796,546	76,217,505	1,236,544,121
2023	1,236,544,121	11,363,962	834,116	193,423,698	147,970,965	74,524,891	4,733,350	79,258,242	1,280,879,476
2024	1,280,879,476	10,624,156	783,679	201,326,308	146,732,754	77,131,846	4,693,742	81,825,588	1,317,951,987
2025	1,317,951,987	9,800,026	735,069	208,995,967	145,649,586	79,271,412	4,659,093	83,930,505	1,347,601,067
2026	1,347,601,067	9,008,267	684,136	216,225,259	144,892,802	80,943,651	4,634,885	85,578,536	1,370,171,277
2027	1,370,171,277	8,031,453	635,065	223,410,161	144,185,339	82,151,204	4,612,254	86,763,458	1,385,106,301
2028	1,385,106,301	6,891,847	581,635	229,489,608	143,030,719	82,892,764	4,575,320	87,468,084	1,392,425,709
2029	1,392,425,709	6,070,304	536,520	235,275,551	142,751,898	83,158,606	4,566,401	87,725,007	1,393,160,846
2030	1,393,160,846	5,438,364	492,518	240,636,205	142,129,921	83,016,104	4,546,505	87,562,609	1,387,163,017
2031	1,387,163,017	4,646,268	449,322	244,911,916	141,805,244	82,465,516	4,536,119	87,001,635	1,375,254,925
2032	1,375,254,925	4,309,845	411,728	249,025,617	142,533,811	81,550,340	4,559,425	86,109,765	1,358,721,001
2033	1,358,721,001	4,000,455	373,232	252,114,429	143,791,311	80,371,414	4,599,650	84,971,064	1,339,046,171
2034	1,339,046,171	3,703,681	337,849	254,260,533	149,065,852	79,012,288	4,768,374	83,780,662	1,320,997,983
2035	1,320,997,983	3,427,810	304,400	255,398,724	150,692,592	77,794,992	4,820,411	82,615,403	1,302,030,664
2036	1,302,030,664	3,141,797	274,080	255,709,999	152,614,922	76,543,980	4,881,903	81,425,883	1,283,229,188
2037	1,283,229,188	2,888,459	245,182	255,274,185	154,699,885	75,328,646	4,948,597	80,277,243	1,265,575,408
2038	1,265,575,408	2,630,491	216,786	253,739,150	156,930,136	74,222,910	5,019,940	79,242,849	1,250,422,949
2039	1,250,422,949	2,382,969	191,770	251,258,299	159,453,601	73,310,241	5,100,661	78,410,902	1,239,220,352
2040	1,239,220,352	2,122,888	168,252	247,915,974	162,204,474	72,681,420	5,188,657	77,870,077	1,233,333,564
2041	1,233,333,564	1,890,550	146,004	243,314,702	165,044,481	72,439,246	5,279,504	77,718,750	1,234,526,639
2042	1,234,526,639	1,683,167	127,812	237,919,689	168,179,449	72,683,321	5,379,787	78,063,108	1,244,404,861
2043	1,244,404,861	1,491,160	110,577	231,604,372	171,414,517	73,521,832	5,483,271	79,005,103	1,264,600,693
2044	1,264,600,693	1,311,973	95,461	224,548,458	174,840,822	75,055,020	5,592,873	80,647,893	1,296,757,462
2045	1,296,757,462	1,143,976	81,657	216,767,371	178,404,554	77,389,182	5,706,871	83,096,053	1,342,553,017
2046	1,342,553,017	992,439	68,992	208,324,092	21,633,086	80,631,537	692,007	81,323,544	1,238,109,001
2047	1,238,109,001	851,569	57,864	199,262,183	20,969,892	74,128,402	670,793	74,799,194	1,135,409,609
2048	1,135,409,609	724,552	48,395	189,897,286	20,213,231	67,748,749	646,588	68,395,337	1,034,797,049
2049	1,034,797,049	611,061	39,563	180,091,251	19,481,990	61,519,264	623,197	62,142,461	936,901,747
2050	936,901,747	513,109	32,861	170,086,955	18,768,458	55,473,171	600,372	56,073,544	842,137,043
2051	842,137,043	430,682	26,844	160,059,497	18,066,782	49,631,783	577,927	50,209,710	750,757,877
2052	750,757,877	348,360	21,072	149,943,412	17,409,913	44,013,286	556,915	44,570,201	663,121,866
2053	663,121,866	275,151	16,394	139,869,884	16,803,236	38,636,989	537,508	39,174,497	579,488,472
2054	579,488,472	220,938	12,836	129,921,029	16,245,477	33,517,445	519,666	34,037,112	500,058,135
2055	500,058,135	181,225	10,357	120,207,449	15,738,765	28,664,004	503,457	29,167,461	424,927,780
2056	424,927,780	147,431	8,436	110,843,786	15,278,183	24,079,040	488,724	24,567,764	354,068,935
2057	354,068,935	115,964	6,539	101,861,831	14,867,683	19,759,587	475,593	20,235,180	287,419,392
2058	287,419,392	82,522	4,653	93,228,475	14,523,430	15,702,524	464,581	16,167,105	224,959,321
2059	224,959,321	63,210	3,564	85,016,094	14,230,948	11,904,737	455,225	12,359,962	166,593,782
2060	166,593,782	47,441	2,675	77,226,599	13,994,026	8,359,675	447,646	8,807,321	112,213,296
2061	112,213,296	37,477	2,113	69,907,752	13,805,425	5,058,760	441,613	5,500,373	61,646,706
2062	61,646,706	24,808	1,399	63,038,163	13,668,760	1,991,297	437,241	2,428,538	14,729,250
2063	14,729,250	13,698	772	56,595,425	41,382,084	(852,581)	1,323,746	471,165	0
2064	0	7,826	441	50,600,516	50,593,131	(1,618,392)	1,618,392	0	-
2065	-	1,499	85	45,018,895	45,017,480	(1,440,036)	1,440,036	-	-
2066	-	-	-	39,857,798	39,857,798	(1,274,986)	1,274,986	-	-
2067	-	-	-	35,113,475	35,113,475	(1,123,223)	1,123,223	-	-

# Development of Single Discount Rate

PYE 6/30	Benefit Payments	Discount Rate	Discounted Benefit Payment	Single Discount Rate	Discounted Benefit Payment
2020	\$ 170,151,581	6.50%	\$ 164,877,420	6.34%	\$ 165,002,446
2021	177,748,900	6.50%	161,726,992	6.34%	162,095,181
2022	185,421,760	6.50%	158,411,490	6.34%	159,013,015
2023	193,423,698	6.50%	155,162,245	6.34%	155,987,732
2024	201,326,308	6.50%	151,644,720	6.34%	152,682,788
2025	208,995,967	6.50%	147,813,827	6.34%	149,051,463
2026	216,225,259	6.50%	143,593,234	6.34%	145,015,210
2027	223,410,161	6.50%	139,309,542	6.34%	140,902,546
2028	229,489,608	6.50%	134,366,609	6.34%	136,109,278
2029	235,275,551	6.50%	129,346,752	6.34%	131,223,101
2030	240,636,205	6.50%	124,219,589	6.34%	126,212,757
2031	244,911,916	6.50%	118,710,580	6.34%	120,798,346
2032	249,025,617	6.50%	113,337,578	6.34%	115,505,825
2033	252,114,429	6.50%	107,740,254	6.34%	109,968,007
2034	254,260,533	6.50%	102,025,713	6.34%	104,293,296
2035	255,398,724	6.50%	96,227,633	6.34%	98,515,588
2036	255,709,999	6.50%	90,464,707	6.34%	92,756,153
2037	255,274,185	6.50%	84,798,616	6.34%	87,078,453
2038	253,739,150	6.50%	79,144,317	6.34%	81,395,440
2039	251,258,299	6.50%	73,587,333	6.34%	75,795,217
2040	247,915,974	6.50%	68,176,947	6.34%	70,329,040
2041	243,314,702	6.50%	62,827,790	6.34%	64,909,358
2042	237,919,689	6.50%	57,685,174	6.34%	59,686,778
2043	231,604,372	6.50%	52,726,746	6.34%	54,639,070
2044	224,548,458	6.50%	48,000,381	6.34%	49,816,752
2045	216,767,371	6.50%	43,508,981	6.34%	45,223,902
2046	208,324,092	6.50%	39,262,224	6.34%	40,871,672
2047	199,262,183	6.50%	35,262,303	6.34%	36,763,477
2048	189,897,286	6.50%	31,554,037	6.34%	32,947,256
2049	180,091,251	6.50%	28,098,244	6.34%	29,383,389
2050	170,086,955	6.50%	24,917,701	6.34%	26,096,909
2051	160,059,497	6.50%	22,017,540	6.34%	23,094,486
2052	149,943,412	6.50%	19,367,124	6.34%	20,345,250
2053	139,869,884	6.50%	16,963,379	6.34%	17,847,141
2054	129,921,029	6.50%	14,795,103	6.34%	15,589,517
2055	120,207,449	6.50%	12,853,467	6.34%	13,564,175
2056	110,843,786	6.50%	11,128,860	6.34%	11,762,026
2057	101,861,831	6.50%	9,602,873	6.34%	10,164,618
2058	93,228,475	6.50%	8,252,560	6.34%	8,748,568
2059	85,016,094	6.50%	7,066,293	6.34%	7,502,367
2060	77,226,599	6.50%	6,027,092	6.34%	6,408,743
2061	69,907,752	6.50%	5,122,909	6.34%	5,455,569
2062	63,038,163	6.50%	4,337,557	6.34%	4,626,229
2063	56,595,425	6.50%	3,727,057	6.34%	3,905,833
2064	50,600,516	3.13%	3,069,710	6.34%	3,283,946
2065	45,018,895	3.13%	11,075,836	6.34%	2,747,544
2066	39,857,798	3.13%	9,508,456	6.34%	2,287,557
2067	35,113,475	3.13%	8,122,420	6.34%	1,895,140
2068	30,773,487	3.13%	6,902,451	6.34%	1,561,899
2069	26,824,707	3.13%	5,834,137	6.34%	1,280,324
2070	23,252,919	3.13%	4,903,815	6.34%	1,043,690
2071	20,042,573	3.13%	4,098,501	6.34%	845,972
2072	17,177,268	3.13%	3,405,969	6.34%	681,813
2073	14,638,112	3.13%	2,814,405	6.34%	546,393
2074	12,404,831	3.13%	2,312,637	6.34%	435,432
2075	10,456,149	3.13%	1,890,181	6.34%	345,151
2076	8,769,454	3.13%	1,537,160	6.34%	272,219
2077	7,321,077	3.13%	1,244,333	6.34%	213,713
2087	1,100,907	3.13%	137,487	6.34%	17,382
2097	339,804	3.13%	31,181	6.34%	2,902
2107	105,203	3.13%	7,093	6.34%	486
2112	35,212	3.13%	2,035	6.34%	120
2118	4,877	3.13%	234	6.34%	11
Total Present Value			\$ 3,187,295,506		\$ 3,187,295,506

## Projection of Plan Net Position and Benefit Payments





## SECTION I

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### GLOSSARY OF TERMS

## Glossary of Terms

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<b><i>Accrued Service</i></b>	Service credited under the system that was rendered before the date of the actuarial valuation.
<b><i>Actuarial Accrued Liability (AAL)</i></b>	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability."
<b><i>Actuarial Assumptions</i></b>	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income, and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation, and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
<b><i>Actuarial Cost Method</i></b>	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
<b><i>Actuarial Equivalent</i></b>	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
<b><i>Actuarial Gain (Loss)</i></b>	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
<b><i>Actuarial Present Value (APV)</i></b>	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future payments at predetermined rates of interest and probabilities of payment.
<b><i>Actuarial Valuation</i></b>	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions.
<b><i>Actuarial Valuation Date</i></b>	The date as of which an actuarial valuation is performed.
<b><i>Actuarially Determined Contribution (ADC) or Annual Required Contribution (ARC)</i></b>	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

## Glossary of Terms

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<b><i>Amortization Method</i></b>	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be “open” (meaning, reset each year) or “closed” (the number of years remaining will decline each year).
<b><i>Amortization Payment</i></b>	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
<b><i>Cost-of-Living Adjustments</i></b>	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
<b><i>Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)</i></b>	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
<b><i>Covered-Employee Payroll</i></b>	The payroll of employees that are provided with pensions through the pension plan.
<b><i>Deferred Inflows and Outflows</i></b>	The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.
<b><i>Deferred Retirement Option Program (DROP)</i></b>	A program that permits a plan member to elect a calculation of benefit payments based on service credits and salary, as applicable, as of the DROP entry date. The plan member continues to provide service to the employer and is paid for the service by the employer after the DROP entry date; however, the pensions that would have been paid to the plan member are credited to an individual member account within the defined benefit pension plan until the end of the DROP period. Other variations for DROP exist and will be more fully detailed in the plan provision section of the valuation report.
<b><i>Discount Rate</i></b>	<p>For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically:</p> <ol style="list-style-type: none"><li>1. The benefit payments to be made while the pension plans’ fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period; and</li><li>2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.</li></ol>

## Glossary of Terms

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### ***Entry Age Actuarial Cost Method (EAN)***

The EAN is a cost method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit ages(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.

### ***Fiduciary Net Position***

The fiduciary net position is the market value of the assets of the trust dedicated to the defined benefit provisions.

### ***GASB***

The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for governmental entities.

### ***Long-Term Expected Rate of Return***

The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.

### ***Money-Weighted Rate of Return***

The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.

### ***Multiple-Employer Defined Benefit Pension Plan***

A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.

### ***Municipal Bond Rate***

The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.

### ***Net Pension Liability (NPL)***

The NPL is the liability of employers and non-employer contributing entities to plan members for benefits provided through a defined benefit pension plan.

### ***Non-Employer Contributing Entities***

Non-employer contributing entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB accounting statements, plan members are not considered non-employer contributing entities.

### ***Normal Cost***

The portion of the actuarial present value allocated to a valuation year is called the normal cost. For purposes of application to the requirements of this Statement, the term normal cost is the equivalent of service cost.

## Glossary of Terms

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<b><i>Other Postemployment Benefits (OPEB)</i></b>	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits regardless of the manner in which they are provided. Other postemployment benefits do not include termination benefits.
<b><i>Real Rate of Return</i></b>	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
<b><i>Service Cost</i></b>	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.
<b><i>Total Pension Expense</i></b>	<p>The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year:</p> <ol style="list-style-type: none"><li>1. Service Cost</li><li>2. Interest on the Total Pension Liability</li><li>3. Current-Period Benefit Changes</li><li>4. Employee Contributions (made negative for addition here)</li><li>5. Projected Earnings on Plan Investments (made negative for addition here)</li><li>6. Pension Plan Administrative Expense</li><li>7. Other Changes in Plan Fiduciary Net Position</li><li>8. Recognition of Outflow (Inflow) of Resources due to Liabilities</li><li>9. Recognition of Outflow (Inflow) of Resources due to Assets</li></ol>
<b><i>Total Pension Liability (TPL)</i></b>	The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.
<b><i>Unfunded Actuarial Accrued Liability (UAAL)</i></b>	The UAAL is the difference between actuarial accrued liability and valuation assets.
<b><i>Valuation Assets</i></b>	The valuation assets are the assets used in determining the unfunded liability of the plan. For purposes of GASB Statement Nos. 67 and 68, the valuation assets are equal to the market value of assets.